

## **LISTING OF THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**1. (Currently Amended)** A method of determining a rotor angle in a drive control for a motor, comprising the steps of:

a) estimating the rotor angle on the basis of the rotor magnetic flux in the motor;  
and

b) correcting the estimated rotor angle on the basis of reactive power input to the motor;

wherein step (a) further comprises the step of (a1) estimating the rotor angle during motor start-up according to a predetermined motor load model in conjunction with a start-up sequencer.

**2. (Canceled)**

**3. (Currently Amended)** The method of claim 1, wherein said load model is representative of motor acceleration torque.

**4. (Original)** The method of claim 3, wherein said model is responsive to load torque current feedback ( $i_q$ ).

**5. (Original)** The method of claim 3, wherein said load model is representative of friction torque.

**6. (Original)** The method of claim 5, wherein said model is responsive to motor frequency ( $\omega_e$ ).

**7. (Currently Amended)** The method of claim 1 2, wherein said step (a1) terminates at an adjustable percentage of rated motor frequency.

**8. (Original)** The method of claim 7, wherein said adjustable percentage is about 10 percent.

**9. (Currently Amended)** The method of claim 1 2, wherein said step (a1) is carried out in open-loop mode and terminates at a transition from open-loop mode to closed-loop mode.

**10. (Currently Amended)** A method of determining a rotor angle in a drive control for a motor, comprising the steps of:

a) determining a rotor magnetic flux in the motor; and

b) estimating the rotor angle on the basis of the rotor magnetic flux in the motor, and during motor start-up according to a predetermined motor load model in conjunction with a start-up sequencer; and

c) correcting the estimated rotor angle on the basis of reactive power input to the motor;

wherein step (a) includes the step of non-ideal integration of stator voltage and current values.

**11. (Original)** The method of claim 10, wherein said load model is representative of motor acceleration torque.

**12. (Original)** The method of claim 11, wherein said model is responsive to load torque current feedback (iq).

**13. (Original)** The method of claim 11, wherein said load model is representative of friction torque.

**14. (Original)** The method of claim 13, wherein said model is responsive to motor frequency ( $\omega_e$ ).

**15. (Original)** The method of claim 10, wherein said step (b) terminates at an adjustable percentage of rated motor frequency.

**16. (Original)** The method of claim 15, wherein said step (b) terminates at about 10% of rated motor frequency.

**17. (Original)** The method of claim 10, wherein said step (b) is carried out in open-loop mode and terminates at a transition from open-loop mode to closed-loop mode.

**18. (Original)** The method of claim 10, wherein step (a) further includes the step of correcting phase errors caused by said non-ideal integration via a PLL circuit with phase compensation (F).

**19. (Currently Amended)** A system for determining a rotor angle in a drive control for a motor, comprising:

a first circuit for estimating a rotor angle on the basis of rotor magnetic flux in the motor; and

a second circuit for correcting the estimated rotor angle on the basis of reactive power input to the motor;

wherein said first circuit further estimates the rotor angle during motor start-up according to a predetermined motor load model in conjunction with a start-up sequencer.

**20. (Canceled)**

**21. (Currently Amended)** The system of claim ~~19~~ 20, wherein said load model is representative of motor acceleration torque.

**22. (Original)** The system of claim 21, wherein said model is responsive to load torque current feedback ( $i_q$ ).

**23. (Original)** The system of claim 21, wherein said load model is representative of friction torque.

**24. (Original)** The system of claim 23, wherein said model is responsive to motor frequency ( $\omega_e$ ).

**25. (Currently Amended)** The system of claim ~~19~~ 20, wherein said estimating step terminates at an adjustable percentage of rated motor frequency.

**26. (Original)** The system of claim 25, wherein said estimating step terminates at about 10% of rated motor frequency.

**27. (Currently Amended)** The system of claim ~~19~~ 20, wherein said estimating step is carried out in open-loop mode and terminates at a transition from open-loop mode to closed-loop mode.

**28. (Currently Amended)** A system for determining a rotor angle in a drive control for a motor, comprising:

a) a first circuit for determining a rotor magnetic flux in the motor; and

b) a second circuit for estimating the rotor angle on the basis of the rotor magnetic flux in the motor, and during motor start-up according to a predetermined motor load model in conjunction with a start-up sequencer; and

c) correcting the estimated rotor angle on the basis of reactive power input to the motor;

wherein said first circuit carries out non-ideal integration of stator voltage and current values.

**29. (Original)** The system of claim 28, wherein said load model is representative of motor acceleration torque.

**30. (Original)** The system of claim 29, wherein said model is responsive to load torque current feedback (iq).

**31. (Original)** The system of claim 29, wherein said load model is representative of friction torque.

**32. (Original)** The system of claim 31, wherein said model is responsive to motor frequency ( $\omega_e$ ).

**33. (Original)** The system of claim 28, wherein said estimating step terminates at an adjustable percentage of rated motor frequency.

**34. (Original)** The system of claim 33, wherein said estimating step terminates at about 10% of rated motor frequency.

**35. (Original)** The system of claim 28, wherein said estimating step is carried out in open-loop mode and terminates at a transition from open-loop mode to closed-loop mode.

**36. (Original)** The system of claim 28, wherein said second circuit corrects phase errors caused by said non-ideal integration via a PLL circuit with phase compensation (F).

**37. (New)** The method of claim 1, wherein said correcting step is performed by calculating a first reactive power input value and a second reactive power input value; determining a relation between said first and second reactive power input values; and applying said relation to the rotor angle estimated in the estimating step to obtain the corrected rotor angle.

**38. (New)** The method of claim 1, wherein said estimating step includes the step of non-ideal integration of stator voltage and current values, and the step of correcting phase errors caused by said non-ideal integration via a PLL circuit with phase compensation (F).

**39. (New)** The method of claim 10, wherein said step of correcting the estimated rotor angle on the basis of reactive power input to the motor is carried out by calculating a first reactive power input value and a second reactive power input value; determining a relation between said first and second reactive power input values; and applying said relation to the rotor angle estimated in step (b) to obtain a corrected rotor angle.

**40. (New)** The method of claim 10, wherein step (b) includes the step of correcting phase errors caused by said non-ideal integration via a PLL circuit with phase compensation (F).

**41. (New)** The system of claim 19, wherein said second circuit corrects the estimated rotor angle on the basis of reactive power input to the motor, by calculating a first reactive power input value and a second reactive power input value; determining a relation between said first and second reactive power input values; and applying said relation to the rotor angle estimated in said estimating step to obtain a corrected rotor angle.

**42. (New)** The system of claim 19, wherein said first circuit carries out non-ideal integration of stator voltage and current values; and

wherein said second circuit corrects phase errors caused by said non-ideal integration via a PLL circuit with phase compensation (F).

**43. (New)** The system of claim 28, wherein the estimated rotor angle is corrected on the basis of reactive power input to the motor, by calculating a first reactive power input value and a second reactive power input value; determining a relation between said first and second reactive power input values; and applying said relation to the rotor angle estimated in step (b) to obtain a corrected rotor angle.

44. (New) The system of claim 28, wherein said second circuit corrects phase errors caused by said non-ideal integration via a PLL circuit with phase compensation (F).